ROCHESTER COMMUNITY AND TECHNICAL COLLEGE COMMON COURSE OUTLINE

Course discipline/number/title: MATH 1090: Statway Statistics II

A. CATALOG DESCRIPTION
1. Credits: 4
2. Hours/Week: 4
3. Prerequisites (Course discipline/number): MATH 0990
4. Other requirements: None
5. MnTC Goals (if any): Goal 4/Mathematics/Logical Reasoning

B. COURSE DESCRIPTION. This course is the second course of a two-semester series of courses for students. Concepts and methods of statistics with an emphasis on data analysis will be presented. Developmental mathematics concepts that serve as a foundation for statistical analysis are integrated into the course. Included in the series are: methods for collecting data; graphical and numerical descriptive statistics; correlation; linear regression; basic concepts of probability; confidence intervals and hypothesis tests for means and proportions; and chi-square tests.

C. DATE LAST REVISED (Month, year): February, 2021

D. OUTLINE OF MAJOR CONTENT AREAS:
1. Sampling Distributions
2. Confidence Intervals
3. Hypothesis Testing
4. Chi-square Tests for One-way and Two-way Tables
5. One-way ANOVA
6. Correlation

E. LEARNING OUTCOMES (GENERAL): The student will be able to:
1. Use simulations to explain the properties of a sampling distribution for a proportion and mean and use sampling distributions to construct and interpret confidence intervals for a population proportion and mean.
2. Construct a hypothesis test for the value of a population proportion and mean.
3. Interpret the use of evidence in drawing a conclusion, including interpreting meanings and consequences of Type I and Type II errors.
4. Calculate and interpret the chi-square value for both one-way tables (goodness of fit) and two-way tables (independence and homogeneity).
5. Apply one-way ANOVA methods to test for possible differences between several population means.
6. Choose the appropriate linear, proportional, power, or exponential model to best summarize bi-variate data.
7. Interpret confidence intervals and hypothesis tests for linear regression parameters of slope, intercept, and correlation coefficient.

F. LEARNING OUTCOMES (MNTC):
Goal 4/Mathematics/Logical Reasoning: The student will be able to:
1. Illustrate historical and contemporary applications of mathematics/logical systems.
2. Clearly express mathematical/logical ideas in writing.
3. Explain what constitutes a valid mathematical/logical argument (proof).
4. Apply higher-order problem solving and/or modeling strategies.

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to:
1. Homework
2. Quizzes
3. Examinations
4. Computer laboratory Assignments
5. Group or Individual Projects

H. RCTC CORE OUTCOME(S). This course contributes to meeting the following RCTC Core Outcome(s).
Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

I. SPECIAL INFORMATION (if any):

1. Students must have, either personal or RCTC facility, access to a computer for laboratory assignments.